Remarks/Argument

The Examiner objected to claims 3-23 and 28-33 because the term "pacivating" is unclear. The claims were examined by the Examiner as if the term was identical to "passivate". The term has been changed in the presently pending claims. Further, the term and its variants have been changed in the Description at line 8, page 6; line 14, page 6; line 15, page 6; line 17, page 6; line 15, page 7; line 19, page 7; line 20, page 7; line 2, page 8; line 3, page 8; line 7 page 8; line 10, page 8; and line 14, page 8. The term has also been corrected at line 5 of the Abstract. The term "turbocharge" on line 10, page 7, is changed to "turbocharger". No new matter has been added.

The Examiner rejected claims 1, 21-24 and 27 under 35 USC 102(b) as being anticipated by Bosch (US 6,634,210). Claims 1, 34 and 35 were rejected under 35 USC 102(b) as being anticipated by Gloger (DE 10128869). Claims 36 and 37 were rejected under 35 USC 103(a) as being unpatentable over Gloger in view of Kimberley (US 4,485,794). Claims 1, 8-9, 13, 21-24 and 27 were rejected under 35 USC 103(a) as being unpatentable over Koopmans (US 6,466,022) in view of Gloger. Claims 2, 3, 5-7, 10, 12, 14, 15, 17, and 26 were rejected under 35 USC 103(a) as being unpatentable over Koopmans in view of Gloger as applied to claims 1, 8-9, 13,

21-24 and 27, further in view of Zamora (US 6,583,539). Claim 18 was rejected under 35 USC 103(a) as being unpatentable over Koopmans in view of Gloger as applied to claims 1, 8-9, 13, 21-24 and 27, further in view of Sugimoto (US 6,341,501). Claim 4 was rejected under 35 USC 103(a) as being unpatentable over Koopmans in view of Gloger and in view of Zamora as applied to claim 3, further in view of Yamada (US 6,512,375). Claim 16 was rejected under 35 USC 103(a) as being unpatentable over Koopmans in view of Gloger as applied to claim 9, further in view of Yamada.

Claims 11, 19, 20, 25 and 28-33 are objected to as being dependent upon a rejected base claim. These claims are rewritten in independent form including all of the limitations of the base claim, and any intervening claims, as claims 38-41. Claims 12, 14, 15, 20, and 29-33 are the dependent claims which now depend from the new independent claims 38-41.

Claims 1-11, 13, 16-19, 21-28, and 34-37 are canceled.

Additional claims 42-50 of the invention are added for consideration by the Examiner. The applicants wish to add several comments concerning the related art. These comments may be or not be relevant to the added claims 42-50. Bosch appears to have an insulator (i.e., substrate)

between the sensing elements. It also appears to have an insulator (i.e., ceramic) between the louvered shield and the sensor. The apparent "electrode" of the spark-plug like device seems to have a plurality of sensing elements insulated from one another and the shield. Bosch does not appear to operate on the particulate charge principle as the present inventor does.

Gloger appears to be a capacitive soot sensor with capacitive plates (2) (i.e., electrodes). The insulator (3) material appears to be for insulating the plates from their supporting structure (e.g., pipe). There appears to be no coating, passivative or otherwise, on the exposed portion of the plates or electrodes in the vicinity for detection. Where Gloger teaches coating a spark plug electrode with an insulating film, such as cerium oxide, to act as a passivating layer; the coating appears not to be for detection as these plugs seem not to be detectors. The application of a coating to the glow or spark plugs (i.e., not sensors) appears to be for reducing or preventing soot and adverse ignition of the plugs. The present invention has its electrode coated, which is not designed to prevent soot from attaching to it.

Koopmans sensor appears to use the soot particles adhering to insulator 11 to conduct a leakage current

between the housing 10 and the non-coated electrode 6 of the spark plug. The principle of the present invention involves a charge on an insulated electrode, and not on current flow from a non-coated electrode to the base of the plug.

Zamora appears to teach a spark plug and various configurations of its electrodes. The electrodes may be formed of conventional materials including stainless steel. Zamora does not seem to teach a particulate sensor. The present invention is not a spark plug even though an embodiment may have an appearance of a spark plug.

Sugimoto seems to teach assembling a spark plug by attaching a metal rod indirectly to a center electrode with seal glasses (5 & 6) and a resistor (7), or with a gap having a seal glass in it, on the other end inside of the insulator casing (2), which is a different structure than that of the present invention.

Yamada appears to teach a system for detecting a fouling spark plug in an engine. The fouling of the spark plug may be said to be due to soot forming as an adherence of carbon leading to a shorting of the electrodes. However, spark plug fouling could be caused by a contamination other than carbon. Yamada's electronics seem to deal with current between the electrodes, not a charge

of particulates on a coated electrode as in the present invention. Yamada seems to deal specifically with detection of spark plug fouling and not detection of soot in the exhaust. The presence of soot may be or not be the cause of plug fouling. The spark plug, not the soot, appears to be the subject of detection in Yamada.

Allowance of the rewritten claims based on allowable subject matter, and consideration of the added claims are very respectfully requested.

Respectfully submitted,

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By his Attorney,

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